

In the Specification

The specification has been amended as follows:

Delete paragraph [0012] on page 4 and replace it with the following paragraph:

[0012] Thus, a need continues to exist in the art for improved methods and apparatus for providing thermal and physical contact between a heat sink and chip, thereby enabling good heat transfer between the chip and heat sink, while minimizing bending of the circuit board. These methods and apparatus are preferably inexpensive, easy to ~~assembly~~assemble and/or disassemble for allowing reworkability or replacement of damaged or inoperative chips, and allow for numerous electronic components to be mounted on the module or on the circuit board.

Delete paragraph [0016] on page 4 and replace it with the following paragraph:

[0016] Still another object of the present invention is to provide a method and apparatus that engages a heat sink to an electronic module that is inexpensive while allowing for numerous electronic components to be mounted on the module and on the circuit board.

Delete paragraph [0017] on page 5 and replace it with the following paragraph:

[0017] Another object of the present invention is to provide a method and apparatus for engaging a heat sink to an electronic module that is easy to assemble and disassemble for allowing reworkability or replacement of damaged and/or inoperative components.

Delete paragraph [0023] on page 6 and replace it with the following paragraph:

[0023] Subsequently, pressure is simultaneously applied to both the loading block and the spring by actuating the fastening means. In so doing, pressure on the loading block forces the plurality of legs of the loading block against the circuit board to generate central backside compressive forces directed at the central area of the interconnection grid array. Pressures on the spring are transferred to the plurality of securing means such that the securing means engage the heat sink for coupling the heat sink to the chip. The simultaneously simultaneous pressures applied to both the loading block and the spring advantageously maintain the integrity of the interconnection grid array.

Delete paragraph [0025] on page 7 and replace it with the following paragraph:

[0025] In yet another aspect of the invention, a clamping assembly is provided for engaging an electronic module to another structure. This clamping assembly includes a loading block having a plurality of legs that is positioned toward a circuit board that

is located at a backside of the electronic module. The clamping assembly is located in a location corresponding to a central area of an interconnection grid array. The assembly also includes a spring having a central opening and a plurality of peripheral openings equidistant from the central opening. The spring is adjacent the loading block and does not contact the electronic module. A plurality of securing means are engaged within the plurality of peripheral openings of the spring. A fastening means is engaged within the central opening of the spring such that it is centrally aligned with and in contact with the loading block. The assembly generates central backside compressive forces that direct the loading block against the backside of the electronic module in a location corresponding to the central area of the interconnection grid array such that integrity of the interconnection grid array is maintained, while the plurality of securing means engage the electronic module to the another structure.

Delete paragraph [0040] on page 12 and replace it with the following paragraph:

[0040] As shown in Figs. 2A-3B, loading block 300 is depicted as a table having outwardly extending legs. However, the loading block 300 may have a variety of shapes and sizes including, but not limited to, square, rectangular, circular, oval, and the like. The loading block 300 may also be a substantially planar plate having centrally located upwardly extending protrusions or legs 307, as shown in Fig. 4. Loading block 300 may comprise a material including, but not limited to stainless steel, aluminum or iron-nickel alloy, and may be formed by a variety of techniques

such as machining, casting or coining. The legs 307 may be integrally formed with the loading block or they may be formed independent thereof, and attached to the base plate of the loading block using a known securing means, such as, screws, pins, bonding agents, and the like. For instance, referring to Fig. 4, wherein the loading block is a substantially planar plate, this plate and protrusions (i.e., legs 307) may be integrally formed with each other by known ~~technique~~techniques including, for example, coining, pressing, machining, and the like.

Delete paragraph [0045] on page 15 and replace it with the following paragraph:

[0045] In accordance with the invention, an essential feature of spring 500 is that it is a dual functioning spring. That is, the spring is used to position and hold the loading block 300 against the backside (underside) of the circuit board 250. Additionally, spring 500 is simultaneously used to position and ~~the~~hold securing means (e.g., screws 280, 285) for engaging the electronic module to the heat sink 210, as shown in Figs. 2A and 2B, and coupling the heat sink to the chip. The spring 500 may comprise any of a variety of different shaped springs capable of engaging fastening means 550. For instance, the spring 500 may comprise an x-spring, as depicted in Fig. 3B. A critical feature of the spring 500 is that it should be capable of positioning and holding in place both the fastening means 550 against the loading block 300, and engaging securing means 280/285 to the heat sink 210 for providing the required physical and thermal contact between the heat sink 210 and the chip 220. In the invention, spring

500 is preferably sufficiently flexible such that several screw turns will be required to apply the desired clamping force, preferably in the range 20-40 pounds, to insure a precise load may be applied.